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AUTHOR	Holzer, Harry J.; Lane, Julia I.; Vilhuber, Lars
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ABSTRACT

A study analyzed the extent to which escape from or entry into low-wage status among adult workers is associated with changes in employers and their characteristics. The research used a database that consisted of quarterly establishment records of the employment earnings of almost all individuals (11,207,031) who worked in Illinois from the first quarter of 1990 to the third quarter of 1998. Unemployment insurance and administrative records helped provide limited demographic data. The results, based on a 5% random sample of records between 1990 and 1995, show considerable mobility into and out of low-wage status, even for this sample of workers, who did not include student and other young people with low attachment to the workforce. They indicate that job changes are an important part of the process by which workers escape or enter low-wage status, and that changes in employer characteristics help to account for these changes. Matches between personal and company characteristics also contribute importantly to observed earning outcomes. That is, workers with positive personal characteristics and white men are more likely to gain employment with firms that are likely to pay better wages, while workers with less-positive characteristics, minority groups, and women, are more likely to work for employers and in industries with lower wages. (Contains 20 references and 9 tables.) (KC)

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ESCAPING POVERTY FOR LOW-WAGE WORKERS:

THE ROLE OF EMPLOYER CHARACTERISTICS AND CHANGES

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Harry J. Holzer
Georgetown University
The Urban Institute

Julia I. Lane
American University
The Urban Institute
US Census Bureau

Lars Vilhuber
US Census Bureau

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ABSTRACT

In this paper, we analyze the extent to which escape from or entry into low-wage status among adult workers is associated with changes in employers and their characteristics. We do so using a unique dataset based on individual Unemployment Insurance wage records that are matched to household and employer data. Our results show considerable mobility into and out of low-wage status, even for adults. They indicate that job changes are an important part of the process by which workers escape or enter low-wage status, and that changes in employer characteristics help to account for these changes. Matches between personal and firm characteristics also contribute importantly to observed earning outcomes.

I. Introduction

As welfare reform has been implemented throughout the U.S. in the late 1990's, millions of low-wage female workers have entered the labor market. Concerns have been raised not only about their ability to find employment, but also about the levels of wages and benefits that they earn and their potential for earnings growth over time (e.g., Committee for Economic Development, 2000; Strawn *et. al.* 2001). Indeed, these factors will be critical determinants of the extent to which low-wage women will be able to escape poverty and achieve economic self-sufficiency for themselves and their families. And these issues are clearly just as relevant to low-wage male workers as to their female counterparts.

Yet some very fundamental questions remain about workers in low-wage labor markets in the 1990's and beyond. Among these questions are the following:

- To what extent do low-wage workers experience enough earnings growth over time to "escape" their low-wage or poverty status?
- Do the processes by which workers escape low-wage status differ across demographic groups – especially by gender and age?
- How important is wage growth *within* jobs, as opposed to mobility *across* jobs and employers, for those who escape low-wage status?
- What characteristics of *employers* contribute the most to success in the low-wage market, and which workers are matched to these employers? How important is the quality of that *match* for achieving success in the low-wage market, as opposed to individual skills and other attributes?

These issues are critical to the development of effective welfare-to-work policies, as well as policies for other low-wage workers (as funded by the Workforce Investment Act or more broadly). For instance, they are critical for understanding the extent to which job search and job placement strategies can be successful in helping low-wage workers escape poverty, or the extent to which placement or even training efforts should be targeted towards specific sectors and the skills that are relevant there.

Yet, despite the fairly fundamental nature of these questions, relatively little is known about these issues. Several studies of turnover and its effects on wage growth have been done using data from the National Longitudinal Survey of Youth (NLSY79) – such as those by Royalty (1998), Holzer and Lalonde (2000), and Gladden and Taber (2000). For instance, these studies clearly indicate the fairly positive effects of voluntary (or job-to-job) turnover on wage growth, and the more negative effects of involuntary (or job-to-nonemployment) turnover.[1] The returns to work experience for low-wage workers have also been documented in this work (particularly by Gladden and Taber and also by Burtless, 1995). But the NLSY79 contains very little information on the characteristics of the employers of these workers; and it is too small to analyze employment and dynamics for detailed groups of low-wage workers, and particularly adults. Furthermore, much of the data are from the 1980's, though low-wage labor markets have likely evolved a good deal since that time.

Other studies have focused on the role of employers and their characteristics or hiring behaviors in determining which less-educated workers get hired into different kinds of jobs (e.g., Bishop, 1993; Holzer, 1996); and on the role of employers in the wage-determination process (Groshen, 1991; Abowd, Kramarz and Margolis, 1999;

Abowd and Kramarz, 1999; Lane *et. al.*, 2000). The latter, in particular, represent the latest in a long tradition of work that focuses on the "person" v. the "job", and on the extent to which there are "good" v. "bad" jobs for the same less-skilled individuals.[2] These papers have often used data from particular surveys of employers and/or matched data on employers and some of their employees. But the samples used in this body of work have generally been fairly small, often limited to particular firms or sectors of the workforce; while the work on larger samples has sometimes mostly cross-sectional in nature – all of which has limited the extent to which we can learn about the dynamics of employment and earnings growth for low-wage workers from these studies.

This paper presents evidence on low-wage workers and their jobs and earnings from an important new source of data: the Longitudinal Employer-Household Data (LEHD) currently being compiled at the U.S. Census Bureau. These data match the universe of Unemployment Insurance wage records over the 1990's or earlier to data from the various household and economic surveys of the Census Bureau, as we describe below. The data have been transformed to allow us to analyze a wide range of issues regarding workers, their employers, the interactions between them and their dynamics over time.

Using a subsample of LEHD data from the state of Illinois in the 1990's, we here try to establish some important basic facts about the relationships between low-wage workers and their employers, how these attachments change over time, and a few of the implications of these dynamics for workers and their ability to escape poverty. Definitive answers are deferred to future research. We hope that what we generate here will provide

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[1] See also Topel and Ward (1992).

the basis of additional analyses of these issues in other places and much more specific groups, especially once the data have been more completely matched to data on household characteristics, worker demographics, and employer characteristics.

The outline of this paper is as follows: the next section describes the LEHD data in more detail, and the particular sample of workers and variables used in the analysis in this paper. The following section then presents our empirical results, and then we conclude with some discussion of our findings and what they imply about future work in this area.

II. Data and Methods Used

We take advantage of a new database that enables us to match workers with past and present employers, together with employer and worker characteristics. This database consists of quarterly establishment records of the employment and earnings of almost all individuals who worked in the state of Illinois from the first quarter of 1990 to the third quarter of 1998. These type of data have been extensively described elsewhere (Haltiwanger, Lane and Spletzer, 2000), but it is worth noting that there are several advantages over household based, survey data. In particular, the earnings are quite accurately reported: there are financial penalties for misreporting. The data are current, and the dataset is extremely large: 57,101,724 observations on 11,207,031 workers. Since we have almost the full universe of employers and workers, we can track movements across earnings categories and across employers with a great deal of accuracy. The Unemployment Insurance records have also been matched to internal

[2] This tradition includes the "dual labor markets" literature of the 1970's (e.g., Doeringer and Piore, 1971) as well as the "efficiency wage" literature of the 1980's (e.g., Katz, 1987).

administrative records that have information on date of birth, place of birth, race and sex for all workers, thus providing limited demographic information.

There are some clear disadvantages as well. These job-based data are different from the worker based data with which many researchers are familiar. Earnings refer to quarterly earnings, and we have no information on either wage rates or hours and weeks worked. However, this drawback is substantially mitigated by the ability to use recently developed econometric techniques (see Abowd and coauthors[3]) to estimate individual worker and firm fixed effects for all individuals in the data. The interpretation of these effects for workers is that it is a permanent characteristic of the worker, capturing the worker's average earnings potential when entering the labor market. Thus, workers with positive fixed effects are those with relatively high earnings, regardless of the job they hold or the firm in which they work – perhaps because of their unobserved ability, skills or motivation. The firm fixed effect, on the other hand, is meant to capture unobserved heterogeneity such as capital stock, production practices as well as management and organizational structure. Thus firms with positive fixed effects pay relatively high wages regardless of the workers who fill their jobs. Both effects are estimated from the full sample, but are available for use in sub-samples.

The universal nature of the data also permits us to construct a series of other firm-based measures not usually available to the researcher: job creation and destruction, worker flows and workforce composition.

Results presented below are based on a 5% random sample of wage records for the state of Illinois between 1990 and 1995. We limit our analysis to workers aged 25-64

in this period, and also to those who exhibit at least marginally consistent attachment to the workforce – which we define as showing some employment in at least two quarters for each calendar year. Thus, students and other young people with low attachment to the workforce are excluded here, and we focus instead on low-wage adults.

Since we are defining low-wage workers exclusively on the basis of administrative data at this point, we need a definition that avoids (as much as possible) those whose earnings are low either for transitory reasons (such as a recent job displacement) or voluntarily (such as married women who choose to work part-time). To deal with these issue, we define low-wage status as earning less than $12,000 per year, and we also stipulate that a worker must have had earnings below this level for three consecutive years. We also compute most results separately for men and women.

While one might argue that such a definition of low earnings is too stringent, our analysis of a limited sample of these data that were matched to CPS records indicates that workers with higher levels of earnings are more likely to be college graduates or have low levels of hours worked as opposed to low wages - especially among married women but also among men, to some extent. Thus, our exclusive reliance on administrative data at this time leads us to use a fairly restrictive definition of low-wage or poverty status, which can be checked in the future when broader samples have been matched to household survey data.[4]

To define the extent to which these low-wage workers "escape" their poverty status in the labor market, we begin by categorizing workers by low-wage status in the

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[3] See Abowd, Lengermann and McKinney (2002) and Abowd, Creecy and Kramarz (2002) for a full description of this

[4] More detail is available from the authors on the demographic characteristics of the subsample of workers who were linked to the CPS at different levels of earnings.

period 1990-92, and then consider their status again in the periods 1993-95 and 1996-98 (though we do not present any analysis of the last period in this paper). Thus, we can calculate "transition matrices" into and out of low-wage status for workers across these periods.

While we use an individual's total earnings in each three-year period to measure this status, we also focus on their experience with their "dominant employer" in each period to define employer characteristics and their changes over time. The dominant employer for any given quarter is defined as the one with whom an individual has the highest earnings in that quarter, while the dominant employer over a three-year period is the one that is dominant over the most quarters during that period.

Thus, each worker will have one dominant employer for each three-year period, and workers are considered to have changed employers if their dominant employer changes between these periods. Earnings associated with the dominant employer over a 3-year period will be considered here, as well as the changes in these earnings that are associated with changes in the dominant employer. Employer characteristics that we consider here include 1-digit or 2-digit industry, firm size, and turnover rates. Employee characteristics include gender, age (i.e., "younger" adults who are 25-34 v. those who are 35 and above), race, and an imputed education measure.[5]

Thus, we are able to calculate transition rates into and out of low-earning status for various demographic groups, the characteristics of low-wage v. other workers, how workers are matched with employers by the characteristics of each, and how employer characteristics vary with changes in jobs and earnings status for different groups of workers. The changes in employer characteristics associated with job changes not only

shed light on the substantive dynamics of workers in labor markets, but also enable us to "difference away" the characteristics (observed or unobserved) of the workers themselves, as we attempt to disentangle the effects of people and their characteristics from those of the jobs that they hold on their employment outcomes.

III. Empirical Results

A. Transitions from Low-Wage Status and Job Changes

We begin in part A of Table 1 by presenting the distribution of workers across four categories: those who were never "low-wage" in either period; those who were low-wage in 1990-92 but not 1993-95; those who were not low-wage in 1990-92 but were in 1993-95; and those who were low-wage in both periods. These four categories thus define the transition matrix for low-wage status over these two three-year periods. Results are presented for the overall sample, and then separately by gender and age group (i.e., younger v. older adults).

The results show that, according to our definition, the vast majority of adult workers with at least minimal labor market attachment are not "low-wage" in either period. In fact, the overall percentages who are low-wage are just 5% and 3% respectively in the two time periods. But *transition rates out of low-wage status are fairly high*. Of those who were low-wage in the initial period, over half manage to escape this status in the second period. On the other hand, a relatively small percentage (i.e., 2%) of those who were not low-wage initially fall into this status in the latter period.

Of course, estimated transition rates might be lower if we defined a transition out of poverty-level wages somewhat more stringently – e.g., by requiring these workers to

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[5] The imputation methodology follows that described in Abowd, Kramarz and Margolis (1999).

consistently earn over $12,000, or to earn higher amounts at least some of the time. Tabulations that we have generated with other potential definitions of transitions, as well as the results of the next table, indicate that most of those escaping poverty status are indeed achieving substantial wage gains.[6]

Comparing across demographic groups, we find that women workers were more likely to be low-wage than their male counterparts, while there appears to be little difference by age group among those over 25. Furthermore, over half of those who are initially in low-wage status transition out of that status within each demographic group. Furthermore, the fraction of men who are low-wage in both periods is extremely small.

Part B of Table 1 presents the percent of workers in each of these four categories who changed their "dominant employer" between 1990-92 and 1993-95. Again, results are presented for the total sample and then separately by gender or age group. The results indicate that about a fourth of all workers change their dominant employer across this three-year period. This implies a transition rate of under 10% each year, which is a good deal lower than what we find in the broader literature (e.g., Anderson and Meyer, 1994; Lane, 2000), but which likely reflects the particular sample of workers on whom we focus and the definition of employer change that we use here.[7]

But, for those who are either escaping low-wage status or entering into it, the likelihood of changing dominant employer is roughly twice as large as for those who maintain either their poor or non-poor status. In other words, *changes in employers are associated with almost half of all transitions out of or into low-wage employment status.*

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[6] For instance, a majority of those escaping poverty earn above $15,000 in at least one of the three years considered, though only about one-eighth earn above that level in all three years.

Thus, employer changes are more likely to be associated with major both positive and negative changes in earnings status than is continuity with the same employer. In this case, using more stringent definitions of transitions out of poverty tend to strengthen this finding.[8]

And, while younger workers have higher rates of employer change than older workers but overall and within these categories, the same general pattern holds for all demographic groups considered here. The results are thus consistent with those of Topel and Ward (1992) and others who have emphasized the important potential wage gains associated with job mobility, as well as losses when such mobility is not voluntary.

To what extent are these employer changes associated with the levels or changes in earnings of these workers? In Table 2 we present data on average earnings per quarter and percentage changes in these earnings by the four transition categories regarding low-wage status and whether the worker has changed employers. We focus on averages per quarter rather than total earnings per year or period, since quarters of employment change little across periods for most of these workers.[9] For each variable, we present mean and median earnings, as well as earnings at the 25th and 75th percentiles.[10] Then, separately by gender and age group, we present median earnings and changes as well in Table 3.

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[7] In particular, the omission of younger and marginally attached workers from our sample no doubt reduces the turnover rate substantially, as does our focus on permanent separations that exclude temporary layoffs, etc.

[8] For instance, job changes are associated with about 70% of the cases where consistently low-wage workers in the early period earn above $15,000 for one or more years in the later period.

[9] Median quarters of employment are 11 for job-changers and 12 for non-changers in the period 1990-92, and they are 12 for both groups in the period 1993-95. No doubt these high rates of employment reflect our focus on older and relatively attached workers, as well as the fact that a worker shows up as being "employed" if they appear with any employer during that quarter.

[10] Means have been calculated for samples that omit both the top and bottom 1% of earnings levels and changes, to minimize the effects of outliers on our results. Of course, the medians are completely unaffected by these procedures, while the 25th and 75th percentiles are only slightly affected.

The results indicate that earnings levels are generally lower among those workers that tend to change their dominant employer, even within the subsamples defined by low-earnings status. However, *employer changes are associated with the largest gains in mean and median earnings for those escaping low-wage status and the largest losses in earnings among those entering that status.*[11] The differences here are rather dramatic – e.g., median earnings rise by 37% among those who escape low-wage status by changing employers but only by 9% among those who do not change; while median earnings fall by 34% among those who fall into low-wage status by changing employers but only by 6% among those who do not. This pattern holds within each demographic group as well in Table 3.

Furthermore, even among those who remain in low-wage or non-low-wage status across periods, the variance in earnings changes associated with job changes appears to be much higher than that associated with no employer change. Thus, the gap in earnings changes between those at the 25th and 75th percentiles is higher among job changers than non-changers within each category defined by low-wage status and transitions into or out of it.

Overall, the data clearly indicate that job changing is associated with relatively large changes in earnings status in either direction – consistent with evidence described above by Gladden and Taber as well as others. The changes in employer characteristics associated with these job changes, and how they are related to the characteristics of workers as well as to observed changes in employment outcomes, are analyzed in some detail below.

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[11] Standard errors on mean earnings changes in the fifth column of Table 2 for those who are changing jobs are roughly .02 among those escaping low-wage status and .05 for those falling into it. Differences in mean

B. Employers, Workers, and the "Matches" Between Them

We begin by considering some personal characteristics of workers, of employers, and of the "matches" we observe in the labor market between the two. Part A of Table 4 presents data on worker gender, race and education (imputed) across the four quartiles of the distribution of worker "fixed effects", both overall and adjusted for these observable worker traits. Similarly, Part B of the table presents the size, turnover rate and broad industry categories of firms by the quartiles of the distribution of firm fixed effects. Finally, in Part C we present worker characteristics across the four quartiles of the firm fixed effects distribution, to illustrate something about the nature of the "matching" that occurs in the labor market between workers and firms.

The results of Part A of Table 4 indicate that females, non-whites and the less-educated are more heavily concentrated among those with lower personal fixed effects than are males, whites and more-educated workers respectively. Of course, it is no surprise that these groups earn less in the labor market, due to differences in skills and/or discrimination across groups. However, the correlation of these characteristics with fixed effects indicate that at least part of their earnings disadvantages are *permanent*, and not associated with the behaviors or preferences of particular employers. These portions of their lower earnings might reflect the attitudes, skills or behaviors of the workers themselves rather than the employers for whom they work. However, most of the original differentials across quartiles disappear after making these adjustments

In Part B, we similarly note that certain characteristics of employers are associated with permanent tendencies to pay more to workers there. In particular, large

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earnings changes across groups that are discussed here and below are statistically significant.

firms, those with low turnover, and those in manufacturing pay higher earnings than smaller firms, those with high turnover, and those in retail trade or the services. Again, these overall relationships have all been noted before (e.g., Brown and Medoff, 1989; Parsons, 1986; Katz, 1987). But it is clear here that these relationships denote the characteristics of the firms themselves, rather than those of workers who happen to be employed there.

Finally, the data in Part C indicate that females, nonwhites, the less-educated, and others with permanently low earnings are also matched to firms that permanently pay less than others – in other words, *workers with strong/weak fixed effects are matched to firms with similarly strong/weak effects*. Thus, the characteristics of the workers themselves contribute to their low earnings, but so do those of the employers for whom they work. This positive correlation between worker and firm characteristics reflects an outcome of the "matching" process in labor markets that certainly needs further exploration.

In Tables 5 through 7 we consider the characteristics of employers (and, to a much lesser extent, those of workers) that are associated with low-earnings status and transitions into and out of this status among workers. Thus, Table 5 presents the distributions of workers across industry groups, by low-earnings status in the two periods and by whether or not the individual changed their dominant employer. For those that have not changed employers (Part A of the table), one listing of industries appears; for those that have changed (Part B of the table), we present their industry both in 1990-92 and 1993-5. Similarly, Table 6 presents data on the sizes and turnover rates of their employers by similar breakdowns, and Table 7 presents personal and firm fixed effects. As the personal effects do not vary when individuals change jobs, these are presented just

once in all cases, while separate firm effects are presented twice for the job changers only.

The results of Table 5 show considerable differences in industries of employment for workers according to their low-earnings status. For instance, we find that low-wage workers are much more likely to be found in retail trade (particularly eating and drinking establishments) and in the services (especially education, personal services and recreation) than other workers, while they are less likely to be found in construction, manufacturing, utilities and wholesale trade. Indeed, the strongest differences appear between those who are never low-wage v. those who are low-wage in at least one period, even if they subsequently escape this status; this suggests that the personal characteristics of these workers might have strong effects on the industries in which they gain employment.

On the other hand, comparisons of industries of workers who change their dominant employers in Part B of the table show some striking differences in industries for the same people, particularly if they escape or enter low-wage status. For instance, workers who were low-wage in the earlier period but not in the later one clearly gain employment in manufacturing and some of the services (notably health care and business services), and to a lesser extent in construction and wholesale trade, while losing employment in retail trade (especially eating and drinking) and other services (like education, personal and recreation). For the most part, the opposite is true for those who enter low-wage status in the later period. Thus, industry changes appear to be strongly related to changes in earnings status, even for the same individuals, consistent with some earlier evidence on industry differences in earnings (e.g., Krueger and Summers, 1987).

Similar findings appear in Tables 6 and 7. For instance, Table 6 clearly indicates that firm sizes are higher and turnover rates lower among workers with lower earnings, even for those who manage to eventually escape this status and those who enter it. But those workers who escape this status by changing employers end up in larger firms with less turnover, while the opposite is true for those who enter low-wage status by changing employers.

In Table 7, we find large differences in personal fixed effects between those who are never low-wage and those who are low-wage in one or more periods; this clearly indicates the important role of personal skills and other attributes in determining earnings status among workers. We also find large differences in firm effects across these groups, even for those who do not change jobs, which seems to confirm the tendency of workers with strong personal characteristics to be matched to better jobs and employers in the labor market. On the other hand, firm effects clearly improve for those individuals who manage to escape low-earnings status by changing jobs, while they deteriorate for those who enter this status because of a job change.

Clearly, then, the characteristics of the firms to which workers are matched have some independent effects on their ability to escape low-earnings status, in addition to their own personal attributes. A greater understanding of how this "matching" process works, and exactly what the most successful pathways are for workers to improve their earnings status, would clearly be useful for the development of successful policies to help low-wage workers.

C. Regression Results

Tables 8 and 9 present some preliminary estimates from regression equations of the determinants of movements into and out of low earnings status and of earnings growth more generally. The dependent variables in Table 8 are changes in the logs of quarterly earnings with the primary employer between 1990-92 and 1993-95. In Table 9, the dependent variable is the probability of being a low-earnings worker in the latter period, with separate equations estimated for those who have been or not been such a worker in the earlier period. These equations are estimated as binomial probits.

Generally, the equations reflect "first differences" models. Changes between the two periods in various characteristics of the primary firm – such as its size, turnover rate, and fixed effect – are included among the independent variables. A set of dummy variables also captures the range of transition possibilities across three very broad industry groupings: manufacturing, retail trade/service, and all other industries. Thus, we include 8 dummy variables here to capture transitions (with the omitted category covering those who worked in "other" industries in both periods).

In the second specification of each equation, we add a person-specific effect to the model as an additional independent variable. Though such fixed effects should be "differenced away" in a pure first-differences model, we include them here to allow for the possibility that changes in earnings over time reflect personal rather than only firm characteristics, even when the former are fixed in nature.

The results in Table 8 provide general support for the notion that changes in firm characteristics are important explanations of changes in earnings. Changes in firm size, turnover rate, and fixed effect all have significant effects of the anticipated sign on

earnings changes. Controlling for these, changes in industry effects are also quite important, with those moving to the retail trade/service sector experiencing the most negative (or least positive) earnings changes and those moving out of those sectors enjoying the most positive changes.

The results of Table 9 are generally consistent with those of Table 8. However, the effects of changes in firm size are generally of the wrong sign, while those of changes in turnover are significant only for those who do not begin with low earnings. Industry changes remain important, though in somewhat different ways. For instance, among those not initially having low earnings, movements into retail trade/services generate the largest probabilities of having low earnings in the latter period, though even having been in those sectors in the earlier periods puts one at risk. For those initially having low earnings, being consistently in the retail trade/service or the "other" sectors generates the greatest likelihood of remaining in low-earnings status.

Finally, the inclusion of personal fixed effects has strong positive effects on earnings growth and negative effects on the probabilities of having low earnings, regardless of initial status. Inclusion of these person effects generally reduces in magnitude but does not eliminate the effects of changes in firm characteristics. However, these results raise the important possibility that firm and person effects interact in generating movements in earnings over time, which we will explore further in our subsequent work.

IV. Conclusion

In this paper, we analyze the extent to which escape or entry into low-wage status among adult workers is associated with changes in employers and their characteristics. The results show the following:

1) *There is considerable mobility into and out of low-wage employment status*. A large fraction of adults who have very low earnings over lengthy periods of time (i.e., at least 3 years) manage to escape this status. This is true among men as well as women and among those who are older or younger than age 35. However, a small group of workers who are not low-wage initially will enter this status as well, regardless of their demographics.

2) *About half of those workers who either escape or enter into low-wage employment status across 3-year periods change their primary employers*. This rate of employer change is twice as high as occurs among those with no change in their low-wage status. Earnings changes associated with these employer changes in either direction are far more dramatic than those associated with employer retention.

3) *Workers with positive personal characteristics generally "match" to firms with positive characteristics, such as large size, low turnover, or being in a high-wage industry and similarly for those with weaker personal characteristics*. Thus, those with better characteristics get an extra boost in their earnings from the positive characteristics of their employers, while those with weaker personal characteristics suffer additional disadvantages. Women, minorities and the less-educated are likely to have permanently lower earnings, and therefore have more difficulty being matched to good employers.

4) *While personal characteristics are strongly associated with the tendency of workers to ever have low-earnings status, changes in employer characteristics also appear to help those who escape low-earnings status and to hurt those entering into it.*

Taken together, these results suggest that the process by which low-wage workers are matched to employers could have large effects on their relative success in the labor market. Likewise, our ability to help match these workers to particular employers could have important effects on the success of our employment and training policies for these groups, especially if we assume that some workers may face high costs or various barriers (such as transportation costs, limited information and "contacts", employer discrimination, etc.) that limit their access to the better jobs (Holzer, *op. cit.*).[12]

Of course, this analysis remains fairly exploratory. A good deal more work needs to be done, defining the exact characteristics of employers more carefully and the "pathways" by which workers escape low-wage status more clearly. Do some employers, such as "temp" agencies, result in transitions to higher-wage employment more frequently than do others? What are the detailed industries to which many workers switch when they leave retail trade and other low-wage establishments? Which workers are most likely to make these changes?

As for our multivariate regression analysis, we soon hope to test for the effects of a much wider range of firm characteristics, including entry/exit and technological changes and productivity growth measures that will be available from the economic censuses. Once our data are matched to the CPS and ACS household data, the range of demographics for which we can control (and our ability to define our low-wage sample)

[12] In other words, low-wage workers may not be optimally self-selecting into the right employer matches, or they may be optimizing under fairly serious constraints in the "matching" process.

will improve markedly. And we will be able to test for differences over time and across regions in the ability of low-wage workers to improve their earnings status and be matched to higher-quality employers.

At least for now, the descriptive data strongly suggest that employer characteristics and their changes, and the "matching" process more broadly, might be important determinants of relative success for low-wage workers.

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Table 1

Low-Wage Status and Job Mobility 1990-1992 and 1993-1995

A. Mobility Into and Out of Low-Wage Employment

	Male	Female	Young	Old	Total
Total	1.00	1.00	1.00	1.00	1.00
Not low-wage either period	.98	.89	.94	.93	.94
Low-wage earlier not later	.01	.05	.03	.03	.03
Low-wage later not earlier	.01	.03	.02	.02	.02
Low-wage both periods	.00	.03	.01	.02	.02

B. Job Changing by Low-Wage Employment

	Male	Female	Young	Old	Total
Not low-wage in either period	.26	.26	.33	.22	.26
Low wage earlier not later	.59	.44	.58	.41	.47
Low-wage later not earlier	.52	.44	.53	.41	.46
Low-wage both periods	.25	.25	.37	.21	.25
Total	.28	.27	.34	.23	.27

Table 2

Quarterly Earnings Levels and Changes by Low Wage and Job Mobility Status: 1990-1992 and 1993-1995

	Earnings 1990-92				Earnings Changes between 1990-92 and 1993-95			
	Mean	Median	25th Percentile	75th Percentile	Mean	Median	25th Percentile	75th Percentile
Not low-wage either period								
Changers	8,218	6,736	4,387	10,208	.09	.03	-.21	.26
Non-Changers	10,030	8,943	5,773	12,221	.06	.05	-.14	.15
Low-wage earlier not later								
Changers	1,943	1,962	1,413	2,446	.68	.37	-.14	.33
Non-Changers	1,991	2,083	1,555	2,513	.19	.09	-.11	.11
Low-wage later not earlier								
Changers	3,989	3,059	1,952	4,710	-.19	-.34	-.63	-.01
Non-Changers	2,538	2,209	1,533	2,907	-.03	-.06	-.22	.12
Low-wage both periods								
Changers	1,792	1,780	1,186	2,257	.23	.06	-.20	.39
Non-Changers	1,768	1,864	1,333	2,261	.07	.03	-.08	.16

Table 3				
Median Earnings Levels by Gender or Age: 1990-1992				
	Male	Female	Young	Older
Not low-wage either period				
Changers	8,265	5,407	6,273	7,333
Non-Changers	10,485	6,607	7,688	9,112
Low-wage earlier not later				
Changers	2,130	1,905	2,006	1,903
Non-Changers	2,024	2,086	2,122	2,059
Low-wage later not earlier				
Changers	3,622	2,940	2,972	3,115
Non-Changers	2,593	2,130	2,252	2,185
Low-wage both periods				
Changers	2,022	1,649	1,882	1,594
Non-Changers	1,866	1,834	1,841	1,835

Median Earnings Changes by Gender or Age: 1993-1995 v.1990-1992				
Not low-wage either period				
Changers	.02	.03	.03	-.01
Non-Changers	.04	.06	.07	.04
Low-wage earlier not later				
Changers	.42	.35	.36	.39
Non-Changers	.04	.10	.13	.03
Low-wage later not earlier				
Changers	-.45	-.30	-.32	-.36
Non-Changers	-.10	-.03	-.08	-.04
Low-wage both periods				
Changers	-.04	.03	.03	.06
Non-Changers	-.03	.04	.02	.03

Table 4					
Person and Firm Characteristics: General Relationships					
Person Characteristics					
Fixed Effects:	Female		White	Education	
Quartile 1	.51		.69	12.13	
Quartile 2	.47		.74	12.77	
Quartile 3	.45		.80	13.58	
Quartile 4	.41		.86	14.66	
Adjusted Effects					
Quartile 1	.48		.75	12.98	
Quartile 2	.46		.75	13.05	
Quartile 3	.46		.75	13.23	
Quartile 4	.45		.82	13.57	
Firm Characteristics					
Fixed Effects	Size	Turnover rate	Manufacturing	Retail	Service
Quartile 1	143	.418	.06	.36	.40
Quartile 2	179	.236	.18	.10	.4
Quartile 3	267.5	.137	.26	.05	.3
Quartile 4	663.4	.180	.32	.01	.11
Person-Firm Matches					
Firm Fixed Effects	Person Fixed Effects	Adjusted Fixed Effects	Female	White	Education
Quartile 1	-.09	-.22	.58	.78	12.9
Quartile 2	-.07	-.18	.51	.76	13.1
Quartile 3	-.03	-.12	.43	.74	13.3
Quartile 4	-.04	-.13	.33	.77	13.3

Table 5								
Job Changers and Industry: 1990-1992 and 1993-1995								
A. Changers								
Industry	Not low-wage either period		Low-wage earlier not later		Low-wage later not earlier		Low-wage both periods	
	1990-92	1993-95	1990-92	1993-95	1990-92	1993-95	1990-92	1993-95
Agriculture, Mining	.01	.01	.01	.01	.01	.01	.01	.01
Construction	.08	.08	.01	.02	.02	.02	.01	.01
Manufacturing	.20	.19	.08	.11	.13	.06	.05	.06
TCU	.06	.06	.04	.04	.04	.03	.03	.03
Wholesale trade	.10	.09	.04	.05	.07	.03	.03	.03
Retail Trade	.13	.12	.34	.26	.27	.34	.36	.33
Eating/Drinking Ests.	.04	.03	.16	.11	.13	.13	.18	.18
FIRE	.09	.09	.03	.04	.05	.05	.03	.04
Services	.31	.33	.43	.44	.38	.48	.46	.47
Hotel	.01	.01	.02	.02	.02	.02	.02	.02
Personal	.01	.01	.03	.02	.02	.03	.06	.06
Business	.07	.08	.07	.09	.08	.10	.05	.06
Health	.08	.09	.10	.13	.09	.10	.13	.11
Education	.04	.04	.09	.08	.06	.10	.10	.11
Movies/Recreation	.01	.01	.03	.02	.02	.03	.03	.04
Public	.02	.03	.02	.03	.03	.02	.02	.02

Table 5

Job Changers and Industry: 1990-1992 and 1993-1995 (Continued)

B. Non-Changers

Industry	Not low-wage either period	Low-wage earlier not later	Low-wage later not earlier	Low-wage both periods
Agriculture, Mining	.01	.01	.01	.01
Construction	.04	.01	.02	.01
Manufacturing	.24	.06	.07	.03
TCU	.08	.03	.04	.03
Wholesale trade	.09	.04	.03	.03
Retail Trade	.09	.40	.30	.30
Eating/Drinking Ests.	.02	.11	.14	.13
FIRE	.07	.04	.04	.03
Services	.31	.40	.46	.42
Hotel	.01	.01	.02	.03
Personal	.01	.02	.02	.03
Business	.03	.04	.04	.03
Health	.09	.11	.11	.09
Education	.11	.19	.15	.23
Movies/Recreation	.01	.02	.02	.03
Public	.07	.03	.03	.04

Table 6

Job Changers Characteristics: Firm Size, Turnover and "Churning" Rates: 1990-1992 and 1993-1995

A. Changers

	Not low-wage either period		Low-wage earlier not later		Low-wage later not earlier		Low-wage both periods	
	1990-92	1993-95	1990-92	1993-95	1990-92	1993-95	1990-92	1993-95
Firm Size	173	170	153	159	172	138	124	107
Turnover Rate	.297	.283	.391	.353	.363	.380	.408	.394

B. Non-Changers

	Not low-wage either period	Low-wage earlier not later	Low-wage later not earlier	Low-wage both periods
Firm Size	463	170	131	116
Turnover Rate	.214	.318	.325	.295

Table 7

Job Changers and Person Fixed Effects

A. Changers

	Not low-wage either period		Low-wage earlier not later		Low-wage later not earlier		Low-wage both periods	
	1990-92	1993-95	1990-92	1993-95	1990-92	1993-95	1990-92	1993-95
Person Fixed Effect								
Total	-.05	-	-.19	-	-.16	-	-.22	-
Adjusted	-.11	-	-.68	-	-.73	-	-.89	-
Firm Fixed Effects	.06	.04	-.36	-.24	-.15	-.37	-.43	-

B. Non-Changers

	Not low-wage either period	Low-wage earlier not later	Low-wage later not earlier	Low-wage both periods
Person Fixed Effect				
Total	-.02	-.16	-.18	-.19
Adjusted	-.03	-.84	-.90	-1.05
Firm Fixed Effects	.09	-.35	-.36	-.41

Table 8 Regression Estimates: Determinants of Changes in Ln(Earnings) per Quarter with Dominant Firms		
	1	2
Change in:		
Firm Fixed Effect	1.046 (.006)	1.037 (.006)
Firm Size	.020 (.004)	.025 (.003)
Firm Turnover	-.007 (.001)	-.008 (.001)
Industry Status		
Retail Trade/Services in Both Periods	.012 (.003)	.022 (.003)
Retail Trade/Services to Manufacturing	.077 (.011)	.111 (.011)
Retail Trade/Services to Other	.045 (.008)	.073 (.008)
Other to Retail Trade/Services	-.137 (.008)	-1.09 (.008)
Manufacturing to Retail Trade/Services	-.150 (.011)	-.115 (.011)
Manufacturing to Other	-.047 (.012)	-.028 (.011)
Other to Manufacturing	.010 (.012)	.031 (.012)
Manufacturing in Both Periods	-.002 (.004)	.011 (.004)
Person fixed effects	-	.129 (.002)
R squared	.165	.179

Table 9 Regression Estimates: Determinants of Low Earnings Status in Later Period (Probit Model)				
	Low Earnings in Early Period		Not Low Earnings in Early Period	
	1	2	1	2
Change in:				
Firm Fixed Effect	-.144 (.019)	-.123 (.020)	-.02 (.001)	-.008 (.0005)
Firm Size	.221 (.007)	.170 (.013)	.179 (.06)	.05 (.03)
Firm Turnover	-.804 (2.04)	-1.140 (2.070)	-.001 (.0006)	-.0007 (.0003)
Industry Status				
Retail Trade/Services in Both Periods	-.027 (.018)	.002 (.018)	.03 (.001)	.012 (.006)
Retail Trade/Services to Manufacturing	-.222 (.028)	-.197 (.032)	.036 (.007)	.012 (003)
Retail Trade/Services to Other	-.191 (.023)	-.168 (.025)	.039 (.005)	.016 (.003)
Other to Retail Trade/Services	-.185 (.025)	-.150 (.028)	.048 (.005)	.017 (.002)
Manufacturing to Retail Trade/Services	183 .7)	-.154 (.040)	.048 (.006)	.014 (.003)
Manufacturing to Other	-.310 (.024)	-.298 (.029)	.003 (.003)	-.003 (.001)
Other to Manufacturing	-.262 (.004)	-.244 (.051)	.006 (.004)	.002 (.002)
Manufacturing in Both Periods	-.120 (.027)	-.103 (.028)	.006 (.004)	-.003 (.0004)
Person fixed effects	-	-.129 (.008)		-.013 (.0004)
Number of ob servations	7,123		151,028	
R squared	.026	.051	.067	.257
Standard errors in parentheses				

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